AMSAT News Service Weekly Bulletins
Issue: ANS-288
Date: 2023-10-15
Sources: amsat-ans-2023-ans-288-weekly-hyperkitty-624af41a3e.txt

---

AMSAT NEWS SERVICE
ANS-288

In this edition:

* Estonia’s ESTCube-2 Digipeater in Orbit
* 2023 AMSAT Space Symposium & Annual General Meeting Next Weekend
* AMSAT-UK Colloquium Ongoing
* Changes to AMSAT-NA TLE Distribution for September 15, 2023
* ARISS News
* Upcoming Satellite Operations
* Hamfests, Conventions, Maker Faires, and Other Events
* Satellite Shorts From All Over

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to: ans-editor [at] amsat.org

You can sign up for free e-mail delivery of the AMSAT News Service Bulletins via the ANS List; to join this list see: https://mailman.amsat.org/postorius/lists/ans.amsat.org/

ANS-260 AMSAT News Service Weekly Bulletins

To: All RADIO AMATEURS
From: Radio Amateur Satellite Corporation
712 H Street NE, Suite 1653
Washington, DC 20002

DATE 2023 October 15

Estonia’s ESTCube-2 Digipeater in Orbit

ESTCube-2 is a 3U Cubesat largely designed and built by undergraduate students at the University of Tartu, Estonia. It was launched into sun-synchronous orbit as an auxiliary payload on the European Space Agency (ESA) Vega flight VV23 from the Guiana Space Centre at Kourou on October 8 at 01:36 UTC.

Among ESTCube-2's several missions, it will conduct in-orbit signal strength mapping in the 2m and 70cm amateur bands, using periodical full band received signal strength indicator (RSSI) measurements in order to check how polluted these two radio amateur bands are in low Earth orbit.

In addition, a cross-band AX.25 digipeater mode will be used to allow amateur radio operators to use satellite for two-way digital communication. 9600 bps G3RUH AX.25 data uplink will be in 2m amateur band and transmission of digipeated packet in 70cm amateur radio band. Transmission speed and modulation will be the same as for uplink. [Similar to the now

re-entered FalconSat-3.] There are plans to include periodic short audio announcements (similar to FOX-1) to indicate that the digipeater is active.

The high-speed communications system is a COTS transmitter system called HiSPiCO from IQ Technologies. It is used when downloading preselected Earth observation scientific camera full-resolution images using the 2.4 GHz amateur radio band. (See https://www.iq-spacecom.com/products/hispico for details.) Data will be downlinked using QPSK modulated up-to 1 Mbps data-rate signal. Software tools (e.g. GNU Radio, web browser- based) will be published before the satellite launch, in order to enable reception of high speed downlink by the amateur radio community.

The optional multi-station radio frequency ranging experiment will be used to determine satellite distance to Earth in order to improve accuracy of satellite orbit determination. For the experiment, the 70cm radio amateur band will be used in conjunction with four or more amateur ground stations using SDR-based equipment that can provide stable and accurate frequency and time measurements. The satellite downlink will be listened to from several ground stations at the same time.

To educate the next generation of radio amateurs, the satellite will transmit analog messages from space using an NBFM signal containing pre-recorded audio greetings. This activity will infrequently take place according to a schedule published publicly to schools and the AMSAT/HAM community. The transmitted signal will be received by participating Estonian secondary and high schools, using their own built radio antennas and SDR-based receiver systems. This activity is targeted primarily to promote amateur radio and satellite communication (and in general STEM fields) among the younger generation.

The Primary transceiver, shared with the amateur payloads, is using the 70 cm amateur radio band for uplink and downlink purposes. It will be used as the housekeeping beacon for a simple overview of the satellite status and as the main transceiver for receiving tele-commands and firmware upgrades. As well transmitting mission data, like telemetry from each subsystem (< 256 bytes per subsystem) and payload data, e.g. compressed, low resolution image thumbnails (~100 KiB), in AX.25 data packet format with 9600 baud data-rate with G3RUH modulated signal. The spacecraft will have experimental capability to change data-rate up-to 38600 baud using 2GFSK (or 4GFSK for testing) different modulation schemes. During the mission, it is planned to transmit a housekeeping telemetry beacon periodically (~1 KiB), typically once per minute, containing telemetry, health data packets from every subsystem.

The 70 cm amateur radio band downlink will be used to send Plasma brake tether experiment [link] and housekeeping data of the payload module such as temperature measurements, information about the attitude of satellite, energy production etc. (< 256 bytes).

After performing measurements of a material science experiment on corrosion resistant coating, the 70cm amateur radio band downlink will be used to transmit a very small amount of acquired sensor data (~ 200 B per day). The satellite will measure the electrical continuity of the coating material to determine its lifespan after exposure to atomic oxygen in LEO.

Proposing UHF 9k6 using GFSK/G3RUH modulation or 38k4 GFSK/4GFSK or, alternatively, FM voice downlinks, and on S Band downlink DQPSK modulation with 1 Mbps data-rate, downlinks on 435.800 MHz and 2425.000 MHz have been coordinated by the International Amateur Radio Union (IARU).

The Vega C VV23 launch plan was to put ESTCube-2 into a 555km Sun-Sychronous Orbit (SSO). Actual orbit parameters have yet to be confirmed. More info is at https://www.estcube.eu/projekt/ESTCube-2 and https://www.estcube.eu/blogi/Raadio

[ANS thanks IARU, ESA, and the University of Tartu for the above information]

+=+=+=

+=+=+=

Want to fly the colors on your own grid expedition?
Get your AMSAT car flag and other neat stuff
from our Zazzle store!
25% of the purchase price of each product goes
towards Keeping Amateur Radio in Space
https://www.zazzle.com/amsat_gear

+=+=+=

As always, if there is an EVA, a docking, or an undocking; the ARISS radios are turned off as part of the safety protocol.

ARISS Radio Status

Columbus Module radios:
IORS (Kenwood D710GA) – STATUS - Configured. Default mode is for cross band repeater (145.990 MHz up {PL 67} & 437.800 MHz down).
* Powering off for USOS EVA on Oct 19. OFF TBD. ON TBD.
* Powering off for ROS EVA on Oct 25. OFF TBD . ON TBD.
* Powering off for USOS EVA on Oct 30. OFF TBD. ON TBD.
* Powering off for TBD on TBD. OFF TBD . ON TBD.
* Capable of supporting USOS scheduled voice contacts, packet and voice repeater ops.

Service Module radios:
IORS (Kenwood D710GA) – STATUS - Configured. Default mode is fo packet operations (145.825 MHz up & down)
* Powering off for TBD on TBD. OFF TBD . ON TBD.
* Capable of supporting ROS scheduled voice contacts, packet, SSTV and voice repeater ops.
SSTV (Kenwood D710) – STATUS - OFF. Default mode is for scheduled SSTV operations (145.800 MHz down)
* Next planned operation date(s) TBD.
* Specifically configured for SSTV ops.

The latest information on the operation mode can be found at https://www.ariss.org/current-status-of-iss-stations.html

The latest list of frequencies in use can be found at https://www.ariss.org/contact-the-iss.html

[ANS thanks Charlie Sufana, AJ9N, one of the ARISS operation team mentors for the above information]

Upcoming Satellite Operations

Adrian, N8AJM, will be QRV from EM85 (TN) 16th – 20th October. This will be LEO/MEO. Details are available at hams.at

[ANS thanks Ian Parsons, K5ZM, AMSAT rover page manager, for the above information]

Hamfests, Conventions, Maker Faires, and Other Events

AMSAT Ambassadors provide presentations, demonstrate communicating through amateur satellites, and host information tables at club meetings, hamfests, conventions, maker faires, and other events.

+ 41st AMSAT Space Symposium & Annual General Meeting
October 20-21, 2023
Sheraton DFW Airport Hotel
4440 W John Carpenter Fwy, Irving, TX 75063

AMSAT Ambassador Clint Bradford, K6LCS, says,

"Think a 75-minute presentation on "working the easy satellites" would be appropriate for your club or event? Let me know by emailing me at k6lcsclint (at) gmail (dot) com or calling me at 909-999-SATS (7287)!"

Clint has NEVER given the exact same show twice: EACH of the 150+
presentations so far has been customized/tailored to their audiences.

[ANS thanks Clint Bradford, K6LCS, and AMSAT for the above information]

Satellite Shorts From All Over

+ The first PCBs for AMSAT-UK's next FUNcube satellite arrived this past
week. This satellite will provide a Mode U/v linear transponder, an FM
transponder with an uplink at 1267 MHz and downlink on 2 meters (Mode L/v),
and an experimental QPSK downlink at about 20 kbps. (Thanks to G0MRF for
this information)

+ ITU-R WP5A meeting #30 could not achieve consensus on the measures needed
to protect the RNSS in the 23cm band. (Relating to WRC-23 AI 9.1b) Link to
the IARU report on WP5A meeting is at the end of
https://www.iaru-r1.org/2023/itu-r-wp5a-meeting-30-could-not-achieve-consensus-on-the-measures-needed-to-protect-the-rnss-in-the-23cm-band-relating-to-wrc-23-ai-9-1b/
(Thanks to AMSAT-UK and the IARU for this information)

+ VU2JO has created a post detailing tips and tricks for working LEO
satellites. The blog post is available at
https://johnsonfrancis.org/techworld/tips-and-tricks-for-working-leo-satellites/
(Thanks to VU2JO for this information)

+ The Psyche mission to all-metal asteroid Psyche successfully lifted off
from Kennedy Space Center on October 13, 2023 on a Falcon Heavy. This was
NASA's first user of the SpaceX Falcon Heavy rocket.
https://spacenews.com/nasa-launches-psyche-mission-to-metal-world/ (Thanks
to SpaceNews.com for this information)

Join AMSAT today at https://launch.amsat.org/

In addition to regular membership, AMSAT offers membership to:

* Societies (a recognized group, clubs or organization).
* Primary and secondary school students are eligible for membership at
one-half the standard yearly rate.
* Post-secondary school students enrolled in at least half time status
shall be eligible for the student rate for a maximum of 6 post-secondary
years in this status.
* Memberships are available for annual and lifetime terms.

Contact info [at] amsat.org for additional membership information.

73 and remember to help Keep Amateur Radio in Space!

This week's ANS Editor,

Paul Stoetzer, N8HM
n8hm [at] amsat.org